Electronic Version
Stylesheet Version v1.1.1

Virtualizing Network-Attached-Storage (NAS) with a Compact Table that Stores Lossy Hashes of File Names and Parent Handles Rather than Full Names

Abstract

Multiple Network Attached Storage (NAS) appliances are pooled together by a virtual NAS translator, forming one common name space visible to clients. Clients send messages to the virtual NAS translator with a file name and a virtual handle of the parent directory that are concatenated to a full file-path name and compressed by a cryptographic hash function to generate a hashed-name key. The hashed-name key is matched to a storage key in a table. The full file-path name is not stored, reducing the table size. A unique entry number is returned to the client as the virtual file handle that is also stored in another table with one or more native file handles, allowing virtual handles to be translated to native handles that the NAS appliance servers use to retrieve files. File movement among NAS servers alters native file handles but not virtual handles, hiding NAS details from clients.